

Steam Vac Tubular-5

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NTM/mfl

User and installation guide

Steam Vac Tubular-5 – A new steam vacuum suction tool for improved slaughter hygiene on Beef, Sheep and Pork.

- Removes hair, faecal and soiled carcass spots
- Easy , ergonomic and hygienic to use
- Cleans large area
- Reduction of bacteria
- Improved microbial and visual quality



Technical data:

- | | |
|--------------------------|----------------------------|
| • Suction nozzles: | Silicone |
| ○ Total suction width | 95 mm |
| • Handle: | Polyamid, PA – thermoplast |
| • Clip: | Rustfrit stål |
| ○ Vacuum connection: | Ø 32mm |
| ○ Steam connection: | Ø 10 mm |
| • Total weight: | 534 gram |
| • Patent WO2009/138083A1 | |

Installation advice and dimensioning:

DMRI has attached general guidelines for use of Steam Vac Tubular-5 and connections to steam and vacuum. If more assistance is required with specific facility specifications DMRI offers specifications, dimensioning, steam and vacuum supply, commissioning, approvals, training and control after individual customer offers. Contact Helge Møller ph. +45 72202611 Mail: hmr@teknologisk.dk

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User manual

The Steam Vac Tubular-5 tool is developed for steam vacuum suction of warm carcasses. It is especially well suited for removal of contamination as an alternative to removal by knife and hands.

After connection and correct setting of steam and vacuum the tool is used on contaminated areas to be treated. The tool is moved repeatedly over the contamination until it is removed.

A short term reversible product discoloration is normal. Prolonged suction of an area may lead to irreversible product discoloration. By normal use discolorations rarely will occur after chilling of product.

Steam Vac Tubular-5 tool is not well suited for larger material removal of eg. fat and other tissue. In such cases the DMRI Classic model with a larger suction opening is recommended.

If the suction nozzles are blocked by fat or tissue they can be removed by a air pressure gun.

The suction nozzles will wear down over time depending on use and should then be replaced for optimal operation.

The suction nozzles will over time absorp moisture to an extent that will reduce the steam flow too much and thereby reduce treatment efficiency. In such case the nozzles are easily replaced with a new set of nozzles. Used nozzles may after cleaning be placed in a dry environment, where the absorbed moisture will disappear after a week. Then the nozzles may be reused provided they are not worn down.

Replacement of steam vacuum nozzles

If nozzles are to be replaced because of blocking of tear they are replaced with an original set of nozzles.

1. After closing the steam and vacuum supply the tool is disconnected by removing the bracket split.
2. Use a Torx key to remove the five bolts in the bracket on the tool suction head.
3. remove the bracket carefully with your hands, without use of tools as the bracket wall is quite thin.
4. Take out the nozzles from the bracket without tools.
5. The bracket and handle is cleaned before inserting new nozzles.
6. Insert nozzles orientated correctly in the oval bracket openings
7. Make sure all nozzles are orientated and then mount the bracket carefully on the tool head, without use of tools. Make sure the bracket is placed correctly before fastening the bolts.
8. Fast bolts gently with a Torx key.
9. Connect the tool to the clip and secure the connection by inserting the split.
10. You can now start the work again.

Cleaning manual

Cleaning during processing:

The steam and vacuum supply to the silicone nozzles head touching product keeps them continually sanitized. The nozzles sides at mounting, the bracket, and the handle may need a cleaning periodically depending on use. They can be cleaned with luke warm water at breaks (app. 42°C). At breaks a check for free passage in all nozzles should be made and for tear on the nozzle head. If the channels are blocked they can be cleaned with an air pressure gun. In case of worn down nozzles they should be replaced.

Cleaning after processing:

Every day after processing the handle should be cleaned as follows:

1. Disconnect the handle by the bracket split
2. Use luke warm water (app.ca. 42°C) for cleaning inside and outside. Clean inside the handle as well as inside the nozzles
3. Disassemble the handle, bracket and nozzles by following instructions for nozzle replacement
4. Check for free passage in the steam channels and for wear on nozzles. If steam channels are blocked clean them with an air pressure gun. Worn down nozzles should be replaced.
5. Handle, bracket and nozzles are placed upright in a dish washer and washed using a standard program app.60 - 70°C. Standard programs should include pre rinsing, soap wash and after rinsing. Washing temperature depends on the soap tablet used, being either a alkali or acid based soap. Use of soap tablets as prescribed in the soap product-sheet.
6. Handle, bracket and nozzles are dried at room temperature.
7. Assemble the tool. Following instructions for nozzle replacement. Make sure nozzles are placed correctly in the oval holes in the tool head and the bracket is positioned correctly.
8. Connect the handle to steam and vacuum by the bracket split

In case of dried up contaminations on the handle soak handle, bracket and nozzles in soap water. Use a 0,5 – 1% soap concentration or as prescribed in the data sheet for the soap product. Duration of soaking depends on degree of contaminations. After soaking place all part in the dishwasher as described above.

Note!! It is important to soak in a soap solution and not in a detergent, as the soap will dissolve the dirt !!!

Guidelines for installation

The Steam Vac Tubular-5 tool is for sale to be connected with the purchasing parties own existing or for the purpose new installed established supplies of steam and vacuum. As use and set up of the system will vary between different slaughterlines only general recommendations are given for installation guidance.

DMRI offers further specifications, dimensioning, steam and vacuum supply, commissioning, approvals, training and control after individual customer offers. Contact Helge Møller ph. +45 72202611 Mail: hmr@teknologisk.dk

Connection and installing of tool

The steam supplied to Steam Vac Tubular-5 tool must be of a quality suited to come in direct contact with food.

The steam and vacuum hose must be tightened securely on the stainless steel clips with hose clips, and connected to the handle with the split prior to opening of steam and vacuum.

Hoses should be mounted and hung in such a way that they do not touch the treated object during steam vacuuming both while the tool is used or at rest. Furthermore the hose should be mounted in a manner that allows free movement for the operator performing other tasks.

A fork may be useful for leaving the when at rest, see picture. The placement of the fork should be selected in a way that avoids the steam fan to reach products, the operator, or other bypassing operators in the area. A fork example I shown below:



General guidelines for setup of vacuum and steam supply:

Depending on setup, the number of steam vac tools used, distances and adjustment the installations may vary in specification.

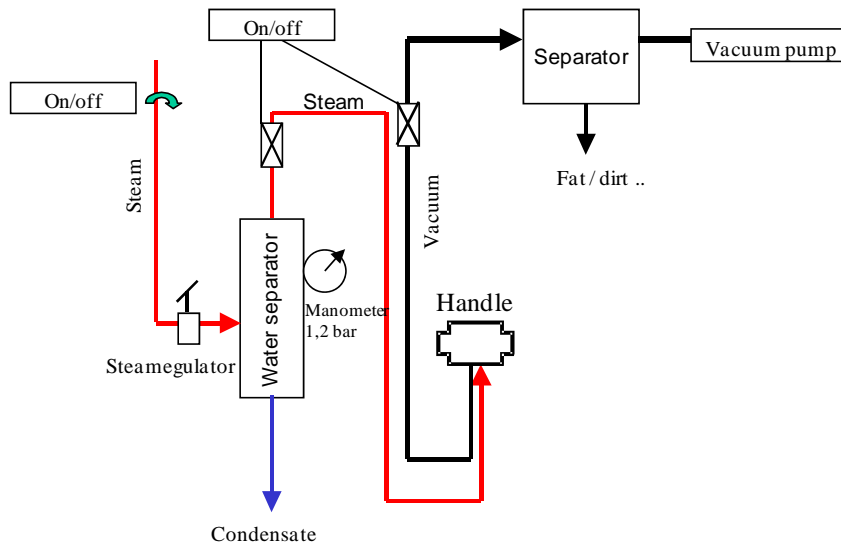
Based on tests with one tool the consumption of steam is estimated to approx. 10-20 kg steam/water/hour/tool. In some plants steam is already available. When using an electrical steam generator, an energy consumption of approx. 7-10 kWh is expected. A vacuum pump system with separator providing 5-15 kPa is also needed and will require an additional energy consumption of approx. 4-6 kWh. Vacuum pump type and size will depend on demand and distance between pump and handle. Eg. a rotary lobe blower with a nominal motor rating of 0,75 to 11 KW. That size of pump is more than sufficient; but it can be placed far away from the handle and still maintain vacuum. Side channel blowers can be used, but care should be taken to avoid water pockets in the vacuum hoses.

In the attached diagram the needed components of a full system is shown in a general design. DMRI offers to dimension and specify individual solutions as a consultancy offer.

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Needed general components are :

- Vacuum pump and valve
- Separator tank (any sealed container, where fat, dirt etc. can be separated from the airflow)
- Water separator
- Steam supply, valve and manometer



Principal diagram for connecting the tool to steam and vacuum supply.

How to adjust the steam and vacuum supply to a standard user setting

Individual systems may need slightly different adjustment to be optimal. In the following a general simple procedure to adjust to at standard setting that has given good results is given.

1. Close of the vacuum, by closing the connection from handle to vacuum pump and water separator
2. Adjust the steam pressure to app. 1,2 bar on the outlet from the water separator (and pressure regulator)
3. Open connection (ball check valve) between the Water separator and steam vacuum handle – until there is a plume of steam “reaching” app. 1 meter from the nozzles
4. Open connection to vacuum pump (ball check valve) until the plume of steam reaches app. 2 cm from the nozzles.
5. Now try to operate the steam vacuum handle on product to be treated

The above method is a basic setting. More vacuum can be needed. In that case the amount of steam will have to be increased also.

EC Declaration of a partly completed machinery and safety evaluation

Steam Vac Tubular-5 is designed to become a part of a complete machine with connected steam and vacuum. As a partly completed machine it is declared constructed according to announcement No. 621 of 25. June 2008, that implements Directive 2006/42/EC.

Risk evaluation is conducted according to ISO 14121-1. The risk profile is acceptable with a low probability of scalding by the operator unintentionally directing the steam fan towards own body or other operators nearby. Above partly completed machinery may not be taken into use, before the partly completed machine into which is been built in or to which purpose it must be used for, conform to any relevant regulations.

Declaration of compliance EC 1935/2004 Material into contact with food

Materials used for manufacturing the Steam Vac Tubular-5 are intended to come into contact with food intended in compliance with regulations No. 1935/2004 EC.